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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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RATNER & PRESTIA
ONE WESTLAKES BERWYN SUITE 301
PO BOX 980
VALLEY FORGE, PA 19482-0980

EXAMINER	
VO, TUNG T	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/581,004	OKAMOTO ET AL.	
	Examiner	Art Unit	
	Tung Vo	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/14/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/21/2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu (US 5,796,991) in view of Kitamura et al. (US 5,757,287).

Re claims 1, 37 and 40-42, Shimizu discloses a vehicle-operation assist comprising: circumferential-state imaging means (201L and 201R of fig. 7) for imaging a circumferential state of a vehicle with a camera and generating a circumferential-state image; synthetic-image generating means (211- 213, and 241-245 of fig. 1) for generating a synthetic image by superimposing an image of an assumed-movement pattern of the vehicle (e.g. an image processing unit of the motion simulator first estimates the change in position caused by the

motion of the vehicle, based on commands from the control equipment, and then generates computer graphics of the surrounding view, based on these predicted values and the road information stored in a database, these being displayed on the above-noted screen) onto the circumferential-state image; wherein an assumed-movement pattern (241 and 242 of fig. 7, e.g. In the motion simulator there is an image database into which are stored video movie images which have been created beforehand. These images are retrieved from this database based on the results of the estimation of the vehicle position and displayed) which is the video data showing movement of the vehicle in performing a predetermined series of driving operations for the vehicle; and displaying means for displaying the synthetic image (102 of fig. 7. e.g. display apparatus which combines a real-time image picked up by a camera with a computer graphics (CG) image or other video image, and more specifically it relates to an image synthesis).

It is noted that Shimizu does not suggest generating the assumed movement pattern of the vehicle is a future movement, an optimized movement, in performing one of several previously stored series of driving operations for the vehicle as claimed.

However, Kitamura discloses generating a synthetic image of the vehicle where the assumed movement pattern of the vehicle is a future movement, an optimized movement, of the vehicle from a current position of the vehicle, start and end positions of the vehicle (fig. 8, e.g. searching area to predict position, predicted position from (X0, Y0) to (Xs, Ys) as start and end positions, fig. 9 and col. 9, lines 20-65 describes the past movement used for prediction the future). Kitamura further suggests the assumed movement pattern of the vehicle is a future movement (fig. 26 is a diagram showing an example of the flow of vehicle search processing in a detection area with a moving vehicle followed), an optimized movement, in performing one of

several previously stored series of driving operations for the vehicle (4 and 6 of fig. 1, e.g. a template memory circuit (4 of fig. 1) for storing a template obtained with the template extracting circuit; and a pattern matching circuit (6 of fig. 1) for determining a vehicle position (future movement) within a subsequent input image by pattern matching between the template corresponding substantially to the moving vehicle stored in the template memory circuit and said subsequent input image).

Therefore taking the teachings of Shimizu and Kitamura as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Kitamura into the system of Shimizu to predict the future movement of the vehicle based on the stored image template and current image template.

Doing so would allow the system to reduce the processing time and accurately predict a future of traveling directions of vehicle as suggested by Kitamura (col. 9, lines 65-66).

Re claim 2, Shimizu further teaches the circumferential -state imaging means (201L and 201 R of fig. 7) has one camera or more and a camera parameter table (111 of fig. 7) for storing a camera parameter which is a characteristic of the camera or each of the cameras and generates the circumferential-state image on the basis of the camera parameter from an output of the camera or each of the cameras (242, 243, 244, 245 and 213 of fig. 7).

Re claim 3, Shimizu further teaches the vehicle-operation assist further comprises wherein the circumferential-state imaging means has space reconfiguring means (245 of fig. 7, e.g. computer graphic is a space reconfiguring means) for generating space data obtained by

relating each pixel constituting an image output from the camera or each of the cameras to a point in a three-dimensional space (Left and Right images are synthesized to form a 317 space using the camera parameters) on the basis of the camera parameter, and viewpoint converting means (21 1 of fig. 7,e.g. image processing) for generating an image viewed from a predetermined viewpoint as said circumferential-state image by referring to the space data and the synthetic-image generating means (213 of fig. 7) generates the synthetic image by referring to the space data (245 of fig. 7).

Re claim 4, Shimizu further teaches the vehicle-operation assist characterized in that a space-data buffer (244 of fig. 7) for temporally storing the space data is included. Re claim 5, Shimizu further teaches the vehicle-operation assist characterized in that the predetermined viewpoint is a point fixed (col. 12, lines 45-59) to the three-dimensional space or the vehicle, and the viewpoint converting' means changes the predetermined viewpoint automatically or through an input from a driver (230, 241 of fig. 7).

Re claims 6-36, 38-39, Shimizu further teaches the vehicle-operation assist characterized in that the assumed-movement pattern (243 of fig. 7) includes video data showing the relation between and assumed-movement start area which is an area in which the vehicle at start of the movement of the vehicle when performing the above predetermined series of driving operations is present and an assumed-movement end area which is an area in which the vehicle at end of the movement is present (111, 241, 245, and 243 of fig. 7); the vehicle-operation assist characterized in that the assumed-movement pattern includes video data showing tire traces of the vehicle

and/or video data showing a movement area of the vehicle (111 of fig. 7); the vehicle-operation assist characterized in that the assumed-movement pattern includes video data showing virtual poles arranged on the outer edge of the vehicle movement area (figs. 10A-10E); the vehicle-operation assist characterized in that the synthetic-image generating means (213 of fig. 7) superimposes current-position data serving as video data showing an area in which the vehicle is present, on the circumferential-state image to generate the synthetic image (figs. 10B-10C); the vehicle-operation assist characterized in that the synthetic-image generating means superimposes the assumed movement start area on a position same as the current-position data (241, 111, and 242 of fig. 7).

Furthermore, Shimizu further teaches the vehicle-operation assist characterized in that movement-position computing means (241 of fig. 7) is included which computes movement positions of the vehicle since the actual driving operations were started (232 of fig. 7), in accordance with signals relating to the actual driving operations, and the synthetic-image generating means fixes the positional relation in accordance with the movement positions (242 and 213 of fig. 7) and characterized in that positional-information storing means (243, 244 of fig. 7) is included which stores positional information of the whole or a part of the video data for the assumed-movement pattern with regard to the basis of the whole or a part of the video data for the circumferential-state image on the synthetic image when the actual driving operations are started, the synthetic-image generating means fixes the positional relation in accordance with the positional information (x0, y0 to xe, ye of fig. 8, x0, y0 is fixed position, the vehicle is not moving).

Moreover, Shimizu further teaches the vehicle-operation assist characterized in that linal-position inputting means (233 of fig. 7) for inputting a final position which is a position of the vehicle at end of the movement and start-position determining means (232 of fig. 7) for obtaining a start position which is a position at start of the movement corresponding to the input final position in accordance with the assumed-movement pattern are included, and the synthetic-image generating means (213 of fig. 7) superimposes the input final position and the start position corresponding to the input 5nal position on the circumferential-state image to generate the synthetic image (col. 13), start-position guiding means (243 of fig. 7) is included which guides the vehicle to the start position by automatically controlling driving of the vehicle; assumed-movement-pattern storing means (244 of fig. 7) is included which holds data relating to the above predetermined series of driving operations and holds assumed-movement data including at least the assumed-movement pattern; assumed-movement-pattern storing means (244 bf sg. 7, 243 of fig. 7) holds a plurality of assumed movement patterns, and pattern selecting means is included which automatically selects the assumed-movement pattern through an input from a driver or a predetermined driving operation, and pattern correcting means (242 of fig. 7) is included which is able to update and correct the content of the assumed-movement pattern held in the assumed-movement-pattern storing means; the vehicle-operation characterized in that the pattern correcting means (242 of fig. 7) updates and corrects the assumed-movement pattern and/or the assumed-movement data in accordance with the vehicle positions at start and end of the corrected movement input from a driver (230 and 111 of fig. 7), the pattern correcting means updates and corrects the assumed-movement pattern and/or the assumed-movement data in accordance with an actual driving operation (111 and 242 of fig. 7); the assumed-movement data

includes time-series data showing a relationship between a movement distance and a steering angle of the steering wheel of the vehicle (231 and 241 of fig. 7, col. 12, lines 45-60); driving control means (231 of fig. 7) is included which automatically controls driving of the vehicle in accordance with the time-series data when actual driving operations corresponding to the above predetermined series of driving operations are started; and operation-start detecting means (235 of fig. 7) is included which automatically detects that actual driving operations corresponding to the above predetermined series of driving operations are started through an input from a driver or a predetermined driving operation.

Response to Arguments

4. Applicant's arguments filed 04/21/2005 have been fully considered but they are not persuasive.

The applicant argued that Neither Kitamura nor Shimizu suggests the features of amended claim 37, namely, generating a synthetic image of the vehicle by superimposing an image of an assumed-movement pattern of the vehicle onto the circumferential-state image; and the image of the assumed-movement pattern of the vehicle shows a future movement of the vehicle in performing one of several previously stored series of driving operations for the vehicle, page 10 of the remarks.

The examiner respectfully disagrees with the applicant. It is submitted that Shimizu teaches generating a synthetic image of the vehicle (105 of fig. 1) by superimposing (see fig. 10A-10E, e.g. the synthesized image is displayed on the display (102 of fig. 1)) an image of an assumed-movement pattern of the vehicle (112 of fig. 1 onto the circumferential-state image

(105 of fig. 1, e.g. a synthesis means (105) which exclusively inserts an image extracted by the extraction means (104 of fig. 1) into the simulation image (112 of fig. 1) which presents a virtual space and which displays the thus synthesized image, see also 213 of fig. 7).

It is further submitted that Kitamura teaches the image of the assumed-movement pattern of the vehicle(template pattern of fig. 35A, T2 is future template pattern) shows a future movement of the vehicle in performing one of several previously stored series of driving operations for the vehicle (fig. 26; see also 4 and 6 of fig. 1, e.g. a template memory circuit (4 of fig. 1) for storing a template obtained with the template extracting circuit; and a pattern matching circuit (6 of fig. 1) for determining a vehicle position considered as a future movement of vehicle, see figs. 8, 26, 35A and 35B, e.g. Figure 8 shows the vehicle starts from point x0, y0 to xe,ye, within a subsequent input image by pattern matching between the updated template (fig. 35A) corresponding substantially to the moving vehicle (driving operations) stored in the template memory circuit and said subsequent input image (current image position picked up by the cameras). Since Shimizu and Kitamura teach the cameras used in the process of determining the future position or movement of the vehicle, so they are combinable to make obvious the claimed invention. In view of the discussion above, the claimed invention is unpatentable over the combination of Shimizu and Kitamura.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the previous Office Action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tung Vo
Primary Examiner
Art Unit 2613